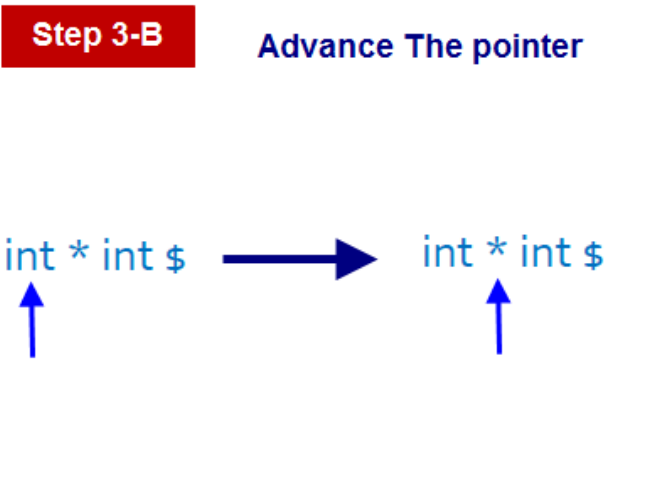
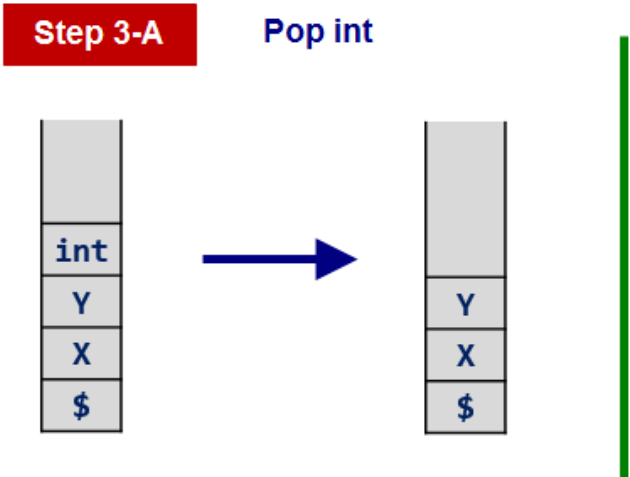
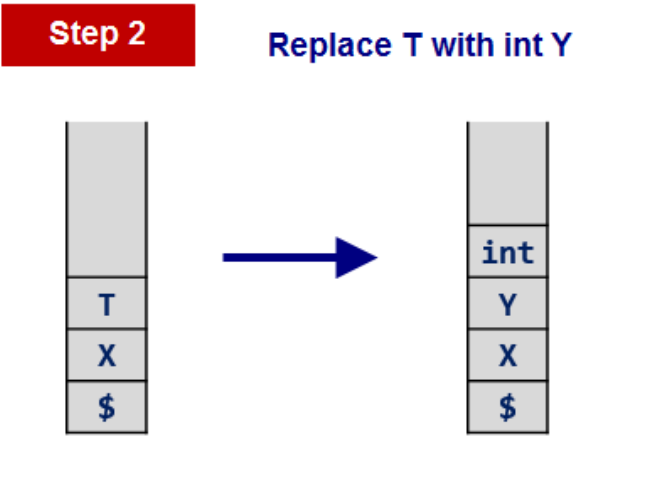
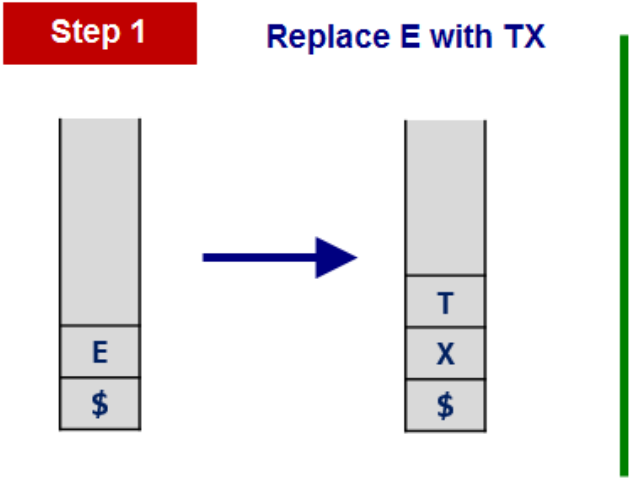


DATASHOW 7 NOTES

Slide 15

Stack	Input	Action	
E \$	int * int \$	TX	Replace
TX \$	int * int \$	intY	Replace
intYX \$	int * int \$	terminal	Pop then Advance
YX \$	* int \$	*T	Replace
*TX \$	* int \$	terminal	Pop then Advance
TX \$	int \$	intY	Replace
intYX \$	int \$	terminal	Pop then Advance
YX \$	\$	ϵ	Replace
X \$	\$	ϵ	Replace
\$	\$	ACCEPT	Pop Then End



FIRST & FOLLOWS

- Recall the grammar

$$E \rightarrow T X$$

$$X \rightarrow + E \mid \varepsilon$$

$$T \rightarrow (E) \mid \text{int } Y$$

$$Y \rightarrow * T \mid \varepsilon$$

- First sets

$$\text{First}(()) = \{ (\}$$

$$\text{First}(T) = \{ \text{int}, (\}$$

$$\text{First}()) = \{) \}$$

$$\text{First}(E) = \{ \text{int}, (\}$$

$$\text{First}(\text{int}) = \{ \text{int} \}$$

$$\text{First}(X) = \{ +, \varepsilon \}$$

$$\text{First}(+) = \{ + \}$$

$$\text{First}(Y) = \{ *, \varepsilon \}$$

- Follow sets

$$\text{Follow}(+) = \{ \text{int}, (\} \quad \text{Follow}(*) = \{ \text{int}, (\}$$

$$\text{Follow}(()) = \{ \text{int}, (\} \quad \text{Follow}(E) = \{), \$ \}$$

$$\text{Follow}(X) = \{ \$,) \} \quad \text{Follow}(T) = \{ +,), \$ \}$$

$$\text{Follow}()) = \{ +,), \$ \} \quad \text{Follow}(Y) = \{ +,), \$ \}$$

$$\text{Follow}(\text{int}) = \{ *, +,), \$ \}$$

NOTES

$\text{Follow}(E) = \{ \$,) \} \cup \text{Follow}(X)$	$\text{Follow}(()) = \text{First}(E)$
$\text{Follow}(X) = \text{Follow}(E) = \{ \$,) \}$	$\text{Follow}()) = \text{Follow}(T)$
$\text{Follow}(E) = \{ \$,) \}$	$\text{Follow}(*) = \text{First}(T)$
$\text{Follow}(T) = \text{First}(X) \cup \text{Follow}(E)$	$\text{Follow}(+) = \text{First}(E)$
$\text{Follow}(Y) = \text{Follow}(T)$	$\text{Follow}(\text{int}) = \text{First}(Y) \cup \text{Follow}(E)$

LL(1) TABLE CONSTRUCTION

1. The parsing table consists of rows (labeled by the non-terminals) and columns (labeled by the terminals and \$).
2. For each grammar rule of the form $A \rightarrow \alpha$ fill in the cells of row A and column **First(A)** with α .
3. For ϵ grammar rule of the form $A \rightarrow \epsilon$ fill in the cell of row A and column **Follow(A)** with ϵ .